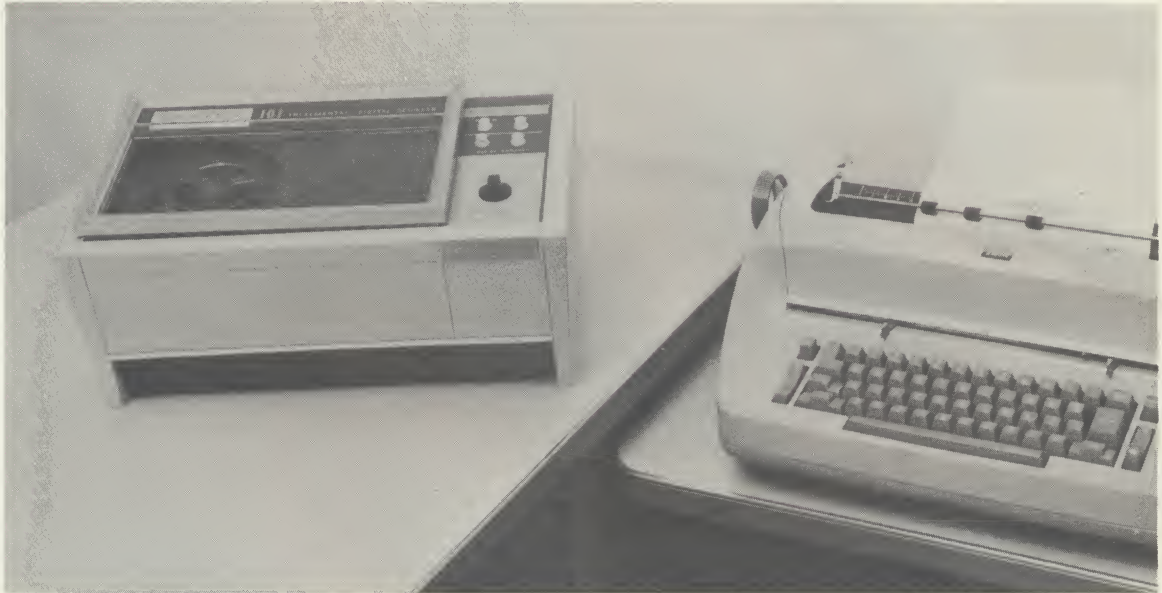


DARTEX DIGITAL DATA SYSTEMS

MAGNETIC TAPE CAPABILITY AT LOW COST



DARTEX-101 INCREMENTAL DIGITAL RECORDER shown with typewriter, representing a typical application where the incremental read/write capability of the DARTEX-101 matches the intermittent data rate of the input/output device.

DARTEX DIGITAL DATA SYSTEMS CAN BE USED FOR -

- * Remote data collection - DATAPHONE compatibility
- * High-speed computer program entry of off-line inputs
- * Off-line and remote computer print-out and data displays
- * Medium-speed and low-speed computer input/output

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DATA SYSTEM CHARACTERISTICS

DARTEX Digital Magnetic Tape Data Systems provide a flexible array of capabilities coupled with reliability and simplicity of operation.

DARTEX-100 TAPE TRANSPORT

Common to all DARTEX Digital Magnetic Tape Data Systems is the DARTEX-100 Tape Transport. Measuring 8-1/2 by 11-1/8 by 9 inches and weighing less than 25 pounds, it has a storage capacity of over two million bits of data on a three-inch reel of quarter-inch wide magnetic tape. An automatic loading feature provides for simple rapid exchange of tape reels. It records or reads out data at speeds compatible with electric typewriters, medium-speed computers, electronic desk calculators, and DATA-PHONE equipment. Appropriate control and interface electronics can be provided for varied applications. A servo-driven single capstan follows input commands to provide fast start/stop bi-directional operation, incremental read/write and rewind. All operations are under precise capstan control that gently accelerates and decelerates tape to and from its running velocity. The conservative design of the DARTEX-100 utilizes inherent mechanical simplicity to achieve long trouble-free service.

DARTEX-101 INCREMENTAL DIGITAL RECORDER

DARTEX Data Systems are based around the DARTEX-101 Incremental Digital Recorder. It is comprised of a DARTEX-100 tape transport and a microcircuit data controller which drives the transport in the incremental read/write mode. It also includes a power supply with extra capability to drive solenoids of many output devices. The standard DARTEX-101 can asynchronously record and reproduce eight-bit parallel characters at any rate up to 75 characters/second. This efficiently matches it to a wide variety of data source devices and data output and display devices, as well as the parallel eight-channel DATAPHONE that can be used on any voice-grade telephone line. Optionally, the DARTEX-101 may record or reproduce characters at synchronous rates up to 1200 characters/second, allowing it to be efficiently connected to the paper tape or communication input/output channels of most computers. Data capacity is sufficient to contain all the typewritten entries that can be made in one day.

REMOTE DATA COLLECTION - DATAPHONE COMPATIBILITY

This is the ideal link between the computer and such source devices, keypunches, data logging transducers and curve followers which are located at remote stations. For example, a DARTEX-101

EQUIPMENT DESCRIPTION

DARTEX-100 DIGITAL MAGNETIC TAPE TRANSPORT

The DARTEX-100 is a miniature precision digital transport for use with computers and data acquisition systems where data rates and capacity do not justify the cost of high speed, large capacity digital transports. The DARTEX-100 cost is scaled down according to comparatively lower data rate and data capacity. It features gentle tape handling, precise control of tape motion, and a design which meets the need for reliable, easily maintained data system equipment.

The most advanced tape drive technique, the single capstan drive, is used in the DARTEX-100. Most conventional tape transports use constantly rotating capstans with a roller that rapidly forces the tape against the capstan for fast starts. Similarly, the roller is disengaged and friction in the tape path is used to bring the tape to a sliding stop. This causes wear on both the mechanism and tape during these start/stop transients. Also, the constantly rotating capstan has to run at one selected speed, so that speed changes cannot be readily obtained by remote command. In contrast, the DARTEX-100 tape drive is a single capstan to which the tape is constantly engaged. The tape motion over the head follows this capstan motion at all times. The capstan is servo-driven so that it will, on command from input signals, gently accelerate tape to and maintain it at the desired running velocity or gently decelerate the tape from running velocity to stop. These input signals can command the capstan to provide bi-directional, incremental, rewind, or high speed search operation. At all times, the tape is maintained in non-sliding contact with the capstan in a low friction tape path, and peak acceleration of the tape is limited to a conservative level.

The basic transport includes tape drive electronics and read/write heads together with write drivers and read circuitry that operate with digital inputs and outputs. In addition to power inputs, the transport interface consists solely of digital signals for all control and data inputs and outputs. The DARTEX-100 can mount into a console, a rack panel, or an enclosure for setting on a desk top.

The storage medium is 1/4-inch wide computer grade magnetic tape on 3-inch reels that can be readily exchanged due to an automatic tape loading feature. To load tape, the reel is installed and tape is threaded through a simple slot. The

transport is ready for operation after the "load" button is depressed. There is no need to wrap tape around a take-up reel. This loading feature combines simplicity of operator function with the high performance that can be obtained with a reel in a precision tape transport.

Recording and reading techniques are those that have a history of reliable performance in high speed computer transports. This includes saturation recording with an NRZI data format that has an odd parity recorded for each data frame, and peak detectors in the read circuitry. In the standard recording format, two tracks are used with data recorded serial-by bit on a data track and a parity check bit is written on the other track (ie., complementary coding). Other recording options with up to 4 tracks can be provided.

The beginning-of-tape and end-of-tape options similarly use the proven computer transport technique of photosense from reflective tabs on the tape surface.

Other optional features are available to adapt this versatile transport to individual requirements.

DARTEX-101 INCREMENTAL DIGITAL RECORDER

The DARTEX-101 uses the DARTEX-100 Digital Magnetic Tape Transport with an integrated microcircuit data controller and a power supply to provide a complete incremental recording system. A wide variety of input and output data rates may be accommodated (and synchronized with external control signals) without sacrificing storage density.

This recording system will write or read parallel eight-channel codes (including parity) for asynchronous (incremental) operation at rates up to 75 characters per second. This format and data rate match the DARTEX-101 to the DATAPHONE 402 data sets. Optional interface circuitry provides plug-in compatibility. All codes received to be written or those read back from tape are checked for proper odd parity. The check bit of all incoming codes is automatically corrected, if necessary to provide proper parity before the code is recorded, enabling the use of seven-channel codes without redundancy where desired. This insures that erroneous characters will not be lost either on writing or reading.

Each eight-bit character is recorded serially-by-bit on a single data track and a parallel parity track using the standard recording format of the DARTEX-100 transport. Recording a

character is accomplished upon receipt of a write command by linearly bringing the tape up to its recording speed, then recording the 8-bit character serially on the data track, followed by an end-of-character mark which also serves as a "longitudinal" parity check for the character. After the end-of-character mark is written, the tape is linearly decelerated to a stop. A small gap is left between characters to allow for starting and stopping of tape during incremental reading and recording.

Reading is accomplished in a manner similar to recording. Upon receipt of a read command, the tape is linearly accelerated to its reading speed, the character is read serially from tape into a register, and the tape is decelerated to a stop. Immediately upon reading the complete character into the register, parallel output lines are energized for each data bit read from tape, along with an output strobe signal of approximately 50 microseconds duration. If desired, this output strobe signal may be caused to remain true, along with the parallel data lines, until receipt of an external feedback signal.

Characters of fewer than eight bits may be recorded by simply grounding the unused inputs.

EQUIPMENT SPECIFICATIONS

	DARTEX-100	DARTEX-101
Storage Media	1/4" magnetic tape on 3" or 3-1/4" reels with computer grade hard binder oxide on 1.0 or 1.5 mil mylar, giving up to 350 feet of storage.	
Recording Format	Saturation NRZI serial binary on one data track with a parallel parity track. Other formats optional.	
Recording Density	556 bits/inch standard. Other densities optional.	30 8-bit characters/inch using 556 bits/inch density.
Storage Capacity	Over 2.3 million data bits.	Over 120,000 alphanumeric characters.
Read/Write Speed	10 inches/sec bi-directional. Others to 40 inches/sec optional. Multi-speeds optional.	3 inches/sec.
Data Rate	5,560 bits/sec standard. Up to 22,240 bits/second/track optional.	Asynchronous to 75 characters/sec. Higher synchronous rates to 1200 characters/second optional.
Start/Stop Time	15 ms at 10 ips tape speed either direction -- proportionately less at lower speeds.	
Start/Stop Distance	75 mils at 10 ips tape speed -- distance for lower tape speeds proportional to square of speed.	
Rewind	Precise capstan control at 40 ips takes less than two minutes to rewind 350 feet.	
Electronics	All silicon solid-state printed circuits with plug-in glass-epoxy cards -- integrated microcircuit data controller in DARTEX-101.	
Interface Levels	0v and +6v nominal -- True inputs are -6v to +0.5v; False inputs are +2v to +15v. Other levels optional.	

	DARTEX-100	DARTEX-101
Data Inputs	2 channels, one for data, one for parity.	8 channels with or without strobe. That is, the receipt of each incoming 8-bit character may be indicated either by the presence of a "true" level on one or more of the data lines or by a separate timing signal.
Control Inputs	Run Forward Run Reverse Fast Forward Fast Reverse Write Enable	Read Character Record Character Rewind Backspace (optional) Forward Space (optional)
Data Outputs	2 binary pulsed channels (data and parity) which also provide "echo" check of write current while recording.	8 channels with strobe signal.
Control Outputs	Transport Ready. End-of-tape (optional). Beginning-of-tape (optional).	
Size	8-1/8" x 11-1/2" top plate, 7-1/2" behind mounting surface, 1-3/4" above mounting surface. Glass cover door included.	9-1/4" x 16-3/4" x 10-3/4" deep with optional enclosure (shown on front page). 8-1/2" x 15-1/2" x 9" without enclosure.
Orientation	Horizontal or vertical.	Horizontal or vertical.
Weight	Less than 25 pounds.	Less than 40 pounds.
AC Power	117v $\pm 10\%$, 50/60 cps, 25 watts.	117v $\pm 10\%$, 50/60 cps, 100 watts.
DC Power	+12v $\pm 10\%$, 1 amp aver. -12v $\pm 10\%$, 1 amp aver. (+12v requires 4A peak, not simultaneous). +6v $\pm 1\%$, 0.1 amp -6v $\pm 1\%$, 0.1 amp.	Self generated.

OPTIONAL FEATURES

- * Power supply for the DARTEX-100.
- * Beginning-of-Tape and End-of-Tape photosense.
- * Enclosure for desk top operation.
- * Panel for rack mounting.
- * Backspace and Forward Space for the DARTEX-101. (Provides ability to backspace or space one character on command -- action may be repeated as often as desired).
- * IBM Selectric Input/Output Typewriter Interface (including solenoid drivers).
- * DATAPHONE 402C transmitting interface with provision for automatic answering.
- * DATAPHONE 402D receiving interface.
- * Read-only and Write-only modifications.
- * Special speeds and multispeed selections.

Custom options such as special interface levels and additional recording tracks are available on request.

Spec. No. 101865

Dartex inc.

September 23, 1965

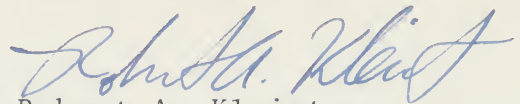
T. H. Nelson,
Systems Consultant,
Box 1546,
Poughkeepsie,
New York.

Dear Mr. Nelson:

Thank you for your inquiry. Enclosed is more detailed information on the DARTEX DIGITAL MAGNETIC TAPE systems.

The basic DARTEX-101 is priced at \$1,990. We would be glad to consider your particular application requirements in more detail, and quote on a specific configuration that will meet your need.

Very truly yours,



Robert A. Kleist
General Manager

RAK:d

Enc.